



Commercial & Industrial (C&I) Large Energy Users Program (LEUP) Program Guide

Fiscal Year 2024
(7/1/2023 through 6/30/2024)



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Limitations

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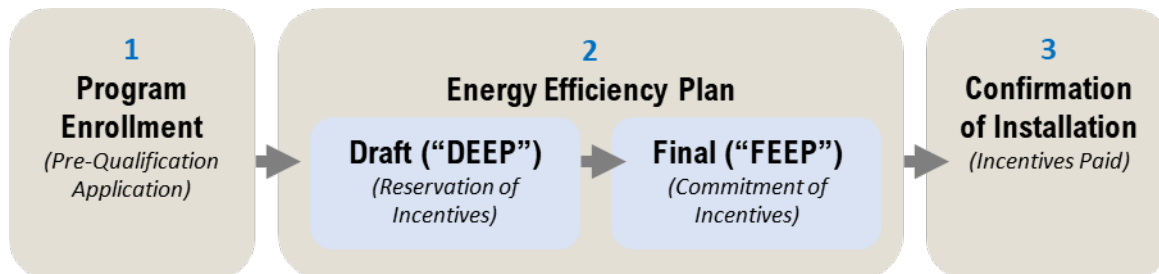
1. Program Description

The Large Energy Users Program (LEUP)'s aim is to foster large commercial and industrial (C&I) utility customers that have facilities in New Jersey to self-invest in energy efficiency projects. The program incentivizes owners or users of buildings to upgrade or install energy conserving measures in existing buildings and to help offset these capital costs provided they meet the program's eligibility and program requirements. These efficiency upgrades are customized to meet the requirements of the customers' existing facilities, while advancing the State's energy efficiency, conservation, and greenhouse gas reduction goals.

Specific design features of this program include:

- Ability to submit multiple projects/buildings under one application submission;
- Flexible application submission process providing the customer the opportunity to submit up to 3 scopes of work (i.e. "energy plans") in each program fiscal year;
- Ability to participate in other programs while engaged in LEUP.

The figure below summarizes the steps for participation:



- 1. Program Enrollment:** To qualify as a Large Energy User, entities or applicants must have paid a minimum of \$5,000,000 in total annual energy costs via gas and electric bills from investor-owned NJ utilities during the previous fiscal year (July 1, 2022 – June 30, 2023). The entity applicant completes and submits the Pre-Qualification Application and provides a utility usage summary to the Program Manager for review and enrollment approval.
- 2. Energy Efficiency Plan.** The program requires qualified applicants to submit an energy plan detailing the proposed scope of work and Measurement and Verification (M&V Plan) for review and approval. Applicants may begin with a Draft Energy Efficiency Plan (DEEP) or proceed directly to submitting a Final Energy Efficiency Plan (FEEP):
 - **Submission of DEEP:** The applicant submits a draft report with high-level project details for an incentive reservation.
 - **Submission of FEEP:** The applicant submits a complete report with project details fully supported by appendices including savings calculations, specification sheets, cost quotes, M&V plan and other project documents for formal incentive commitment.
- 3. Confirmation of Installation:** Upon completion of installation, the applicant submits an As-Built Report including as-built scope of work, project invoices, M&V report and other necessary documents to the Program Manager for review and payment authorization.

2. Eligibility

- To qualify as a Large Energy User, entities must have paid a minimum of \$5,000,000 in Total Annual Energy Costs to NJ Utilities on bills received between July 1, 2022 and June 30, 2023.
 - Total Annual Energy Costs include billed costs from investor-owned NJ Utilities plus any applicable third-party supply costs associated with those accounts.
 - Eligible annual costs include standard costs associated with electric and/or gas delivery and supply (e.g., generation, transmission, distribution, Societal Benefit Charges, etc.) and not those that are unique to the customer (e.g., energy management charges).
 - *NJ Utilities* refer to the regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.
 - Applicant's accounts must be commercially-billed and pay the Societal Benefits Charge (SBC).
- Entity shall be defined as (1) Public: having distinct and separate budgetary authority; (2) Public Schools: having distinct and separate budgetary authority; (3) Private: Non-residential companies including all related subsidiaries and affiliates regardless of separate EIN numbers or locations within New Jersey. Consistent with DOCKET NO. E00703020
- All C&I building sectors are eligible to apply for LEUP with the exception of hospitals. These applicants will be directed to other programs.
- In order to be considered for incentives, the average billed peak demand of each facility submitted in the Draft Energy Efficiency Plan (DEEP)/Final Energy Efficiency Plan (FEEP) must meet or exceed 400 kW and/or 4,000 DTh.
- Entities interested in applying to participate in the program will submit the following information with the Pre-Qualification application. This information should be provided in Excel format.
 - *Service Address, Utility Name and Account Number*
 - *Monthly Electric kWh and/or Gas Therm usage*
 - *Monthly Electric Peak kW*
 - *Monthly Utility Cost*

The Large Energy Users Program is available on a first come, first served basis to existing buildings owned by C&I entities meeting these requirements.

3. Measure Incentives

The Program will offer a maximum incentive per FEEP based on the lesser of the following metrics, not to exceed entity caps:

Cap Type	Amount
Savings Cap	\$0.33/kWh plus \$3.75/therm saved annually for non-lighting measures \$0.16/kWh saved annually for lighting and lighting controls measures
Project Cost Cap	75% of total project cost <ul style="list-style-type: none">Total project costs may include pre-engineering costs, soft costs, and other costs associated with the preparation of the FEEP.

The program has a minimum incentive commitment per FEEP of \$100,000. Projects with incentives below this threshold will be redirected to other programs for C&I customers.

Applicants may submit up to 3 separate energy plans containing unique scopes of work per entity per fiscal year. Incentives shall be reserved upon approval of the DEEP. Program funds will be committed upon approval of FEEP by the Program Manager and should the incentive exceed \$500,000, by the Board of Public Utilities (BPU). The total incentive amount committed for LEUP projects will not exceed \$4,000,000 per fiscal year per entity.

Funding commitment of the FEEP will not exceed the DEEP reservation, at the discretion of the Program Manager. Incentive shall be paid upon project completion and verification that all program requirements are met.

4. Energy Plan Requirements

Applicants must submit their first energy plan to the program no more than 3 months after the approval of their Pre-Qualification application. The initial energy plan may be either a Draft Energy Efficiency Plan (DEEP) or Final Energy Efficiency Plan (FEEP). The DEEP submission is optional. Applicants may skip the DEEP submittal and proceed directly to the FEEP.

The DEEP should provide a high-level overview of the proposed scope of work including, at a minimum, the information listed in the DEEP Requirements section. If approved, an incentive will be reserved for the project. The intent of the DEEP submission process is to provide the program with a high-level overview of the proposed energy conservation measures. From the customer perspective, approval of the DEEP may serve to assist implementers to gain internal corporate approval prior to fully developing a project. Upon approval of the DEEP, the incentive funds are reserved for the project, but not formally committed in the program budget, based on estimated project costs and energy savings.

The FEEP must be submitted no later than three (3) months from date of the DEEP approval letter, if a DEEP was approved, or from the date of Pre-Qualification approval. Upon receipt of the FEEP, the Program Manager has sixty (60) days to review each submittal and provide comments to entity. The Program Manager will in turn present FEEPs to the New Jersey BPU staff for approval as required by Board policy and commitment of incentive. Upon approval of the FEEP, when the scope of work is finalized and project costs/energy savings are more precise, the funds are formally committed.

A Microsoft Word template for the DEEP and FEED format is available for download at www.NJCleanEnergy.com/LEUP. The energy plan may be submitted in Word or PDF format.

4.1 Draft Energy Efficiency Plan (DEEP) Requirements

The DEEP is a succinct report that outlines an applicant's proposed energy efficiency project plans. The DEEP shall include the following necessary components and be organized in a report format with a cover and table of contents. The program will review the DEEP report and, upon acceptance, issue a DEEP approval letter noting the incentive amount reserved and due date for the FEED.

The DEEP should include, at a minimum, the following sections and information:

- I. **Executive Summary:**
 - o Existing energy use by source for the previous 12 months (kWh, kW, MMBtu)
 - o Projected annual energy savings by source (kWh, kW, MMBtu, and %)
 - o Projected annual total site energy savings (kBtu/sqft and %)
 - o Total estimated project cost
 - o Total estimated annual energy cost savings
- II. **Site Overview:** The Site Overview section of the DEEP shall include, but is not limited to, the following information for each facility where energy-efficiency work is to be performed:
 - o Name and address
 - o Short description and use
 - o Year built
 - o Square footage
- III. **Utilities Overview:** The Utilities Overview section of the DEEP shall include a summary of the utility services for the facilities listed in the Site Overview, including:
 - o Total annual usage
 - o Total annual cost (supply and delivery)
 - o Average cost per unit (\$/kWh, \$/therm, etc.)
- IV. **Table of Energy Conservation Measures (ECMs)** to be implemented including the following information by measure:
 - o Estimated Installed Cost
 - o Estimated Annual Energy Savings by source (kWh, kW, MMBtu)
 - o Estimated Annual Energy Cost Savings (\$)
 - o Estimated Simple Payback or IRR % (total of all measures)
- V. **ECM Descriptions** including:
 - o General description of equipment being replaced/augmented
 - o Anticipated Implementation Schedule
 - o Estimated construction start and end dates for each measure

4.2 Final Energy Efficiency Plan (FEED) Requirements

The FEED will build upon the contents of the DEEP submittal and include more specific scope of work information as well as a measurement and verification plan and Appendices to support the savings, costs, and other project information.

The FEED also must be submitted in report format and must include, at a minimum:

- I. **ECM Descriptions** including:
 - o General description of equipment being replaced/augmented
 - o Anticipated Implementation Schedule
 - o Estimated construction start and end dates for each measure

- II. **Executive Summary** including:
 - Existing energy use by source from previous 12 months (kWh, kW, MMBtu)
 - Existing total site energy use from previous 12 months (kBtu/sqft)
 - Calculated annual energy savings by source (kWh, kW, MMBtu, and %)
 - Calculated annual total site energy savings (kBtu/sqft and %)
 - Total estimated project cost (note - prevailing wage rates applicable where required by law)
 - Total estimated annual energy cost savings

- III. **Site Overview:** The Site Overview section of the FEEP shall include, but is not limited to, the following information for each facility where energy-efficiency work is to be performed:
 - Name and address
 - Short description and use
 - Year built
 - Square footage

- IV. **Utilities Overview:** The Utilities Overview section of the FEEP shall include a summary of the utility services for the facilities listed in the Site Overview, including:
 - Total annual usage
 - Total annual cost (supply and delivery)
 - Average cost per unit (\$/kWh, \$/therm, etc.)

- V. **Table of Energy Conservation Measures (ECMs)** to be implemented in next 12 months, including the following information by measure:
 - Estimated Installed Cost (Material, Labor, Construction Management, Other)
 - Estimated Annual Calculated Energy Savings by source (kWh, kW, MMBtu)
 - Estimated Annual O&M Savings (\$)
 - Estimated Annual Calculated Energy Cost Savings (\$)
 - Estimated Simple Payback or IRR % (total of all measures)
 - Anticipated sources of all funding not including Large Energy Users incentive

- VI. **ECM Descriptions** including:
 - Detailed description of equipment being replaced/augmented
 - Detailed description of recommended measure (including quantities, EER, AFUE, etc.)
 - Basis for calculating energy savings and O&M savings (including all assumptions)
 - Basis for calculating installed cost (including all assumptions)
 - Anticipated implementation schedule
 - Estimated construction start and end dates for each measure

- VII. **Measurement & Verification (M&V) Plan:** Description of pre/post M&V to be implemented. Must be in accordance with IPMVP Options or other method pre-approved by Program Manager. **Refer to Appendix C of this program guide for complete M&V guidelines.**

- VIII. **FEEP Appendix A: Professional Engineer (PE) Certification:** This will be requested from the applicant at the conclusion of the FEEP review. PE Certification does not need to be included with the initial FEEP submission. A signed and stamped letter on letterhead from a Professional Engineer attesting to the contents of the final FEEP revision will be required.

- IX. **FEEP Appendix B: Utility bills:** One utility bill is required for each facility submitted with the FEEP only for the month of peak demand. The utility bills will be used to confirm that the billed peak demand of all facilities submitted in the FEEP meet or exceed 400kW and/or 4,000 DTh. Copies of 12 months of utility bills are NOT required in the appendix.

- X. **FEEP Appendix C: Energy Savings Calculations:** Energy savings calculations must be submitted as support for the annual energy savings proposed in the FEEP. The savings

calculations should clearly indicate annual energy savings. Spreadsheets should be submitted in Excel format with formulas accessible, where permissible.

- Please note the following regarding the annual calculated energy savings by source: Depending upon the complexity of the energy conservation measures in the FEEP, the associated calculations may require building modeling to properly estimate the energy savings for particular measures. These measures may include building shell upgrades, building management systems, etc. Typical ECMs such as lighting, HVAC, motors, and others will likely not require these efforts and may be presented with generally accepted energy savings calculations and methodologies. Applicants for these typical ECMs may elect to use NJ Protocols for incentive calculation.
 - Metered data must be submitted in an appropriate format to facilitate review, such as Excel.
- XI. **FEEP Appendix D: Project Cost Documentation:** Copies of quotes and/or proposals to support project costs identified in the FEEP. Material, labor, construction management, and other costs should be separated, where possible
- XII. **FEEP Appendix E: Manufacturer's specification sheets and proof of Qualified Product Listing:** Specification sheets in this section should document equipment metrics such as capacity and efficiency that are used in energy savings calculations *for both existing and proposed equipment*. For specification sheets with multiple options/configurations, circle or highlight the specific model number or configuration which will be installed

5. Incentive Payment Requirements

A Microsoft Word template for the As-Built Report format is available for download at www.NJCleanEnergy.com/LEUP.

If the as-built scope of work will deviate from the approved FEEP, please consult the Program Manager for guidance prior to starting construction.

Once the work defined in the FEEP has been completed, entity shall submit an As-Built Report documenting completion for all measures, which may include but is not limited to the following:

- I. **As-Built Summary:** Differences between the FEEP and as-built project must be documented and will require a revised FEEP submitted for review. In the event the scope of work, and/or cost estimates does not match as-built documentation, an incentive true-up will occur. The true-up is not to exceed the original incentive commitment.
- II. **Invoices for material/labor/other costs**
- III. **Completed M&V report(s) accompanied by a signed and stamped letter on letterhead from a Professional Engineer attesting to accuracy of the M&V report.** The M&V report should extrapolate as-built annual savings values for the project (energy and cost).
- IV. **Certification of compliance with prevailing wage.** This should be a signed letter on applicant letterhead attesting that prevailing wage rates were paid where necessary.
 - Participating projects with a contract at or above current prevailing wage contract threshold amount set pursuant to the New Jersey Prevailing Wage Act (N.J.S.A. 34:11-56.25 et seq) are required to pay no less than prevailing wage rate to workers employed in the performance of any construction undertaken in connection with Board of Public Utilities financial assistance, or undertaken to fulfill any condition of receiving Board of Public Utilities financial assistance, including the performance of any contract to construct, renovate or otherwise

prepare a facility, the operations of which are necessary for the receipt of Board of Public Utilities financial assistance. By submitting an application, or accepting program incentives, applicant agrees to adhere to New Jersey Prevailing Wage requirements, as applicable.

V. **Valid Tax Clearance Certificate from the NJ Division of Taxation**

- Tax clearances may be requested by the customer online at no cost through the Division of Taxation's portal:
https://www16.state.nj.us/NJ_PREMIER_EBIZ/jsp/home.jsp Under the Tax & Revenue Center, Tax Services, select Business Incentive Tax Clearance. For help with the Premier Business Services portal, contact 609-292-9292.

VI. **W9 form, ST-4 or ST-5 Form.** This form must be completed by the entity receiving incentive payment.

- Certain private business entities may hold a "Sales Tax Exempt Organization Certificate (Form ST-5)." This form applies solely to purchases of tangible personal property or services and does not exempt the entity from the requirement to submit the Application for Tax Clearance

6. Measure Requirements

6.1 Eligible Measures

The list below provides a broad overview of the types of equipment in existing buildings that are eligible for upgrade and ECMs that qualify for the program. This list is to be used as a guide other measures may also qualify.

- Window and Skylight Glazing
- Air Distribution in all building types
- Fume hood exhaust systems
- Water Source Heat Pump Systems
- Chilled Water Plant
- Building Controls and EMS
- Boiler equipment
- Package Humidification
- Retail display refrigeration
- Ice Rinks
- Plastic Injection Molding Machines
- Interior/Exterior Lighting and Lighting Controls, *however these measures may not constitute more than 50% of the energy savings of a single energy plan. Please see below.*
- Data center upgrades

6.2 Ineligible Measures

- New construction and major rehabilitation projects are not eligible under the program; however, these projects may be eligible for other NJCEP incentives.
- Maintenance projects such as fixing steam leaks, repairing broken insulation, etc.
- Renewable energy systems (Solar panels, Wind turbines, Hydro power)
- Monitoring software that strictly monitors/reports usage but does not control equipment
- CHP systems are not eligible for incentives through LEUP, but may be eligible under the NJCEP Combined Heat & Power Program.

6.3 Project Comprehensiveness

No DEEP or FEEP may have more than 50% of the overall total energy savings coming from lighting and/or lighting controls measures, unless the Program Manager determines the applicant has demonstrated the scope of work is otherwise comprehensive in that it:

- Assesses of the cost-effectiveness of installing energy conservation measures in each of the following areas in a given building: (i) heating systems, (ii) cooling systems, (iii) ventilation systems, (iv) domestic hot water systems, and (v) building envelopes, and
- Implements all cost-effective energy conservation measures identified through the foregoing assessment in a given building or, as to any such measures not implemented, explains why such implementation would not be practicable. For example, a scope of work that does not include replacement of a 30-year-old atmospheric boiler would not be allowed to include lighting savings greater than 50% of the total energy savings.

6.4 Limitations/Restrictions:

- Incentive shall only be available for ECMs approved in the FEEP. Program Manager may waive this restriction on a case-by-case basis.
- ECMs already installed or under construction will not be considered for incentives and shall not be included in FEEP. Program Manager may waive this restriction on a case-by-case basis.
- Federal grants/incentives are allowed. Other state grants/incentives are allowed provided they do not originate from NJCEP funds. NJCEP loan funds are allowed. Funds provided by a New Jersey investor owned utility (“IOU”) are not allowed. The total of federal, state, and LEUP funding shall not exceed 100% of total project cost.

7. Program Standards

All ECMs must meet Minimum Performance Standards, which may be fulfilled during Professional Engineer review, which shall be understood as the most stringent of:

- Appendix A of this program guide
- ASHRAE 90.1-2019
- Local code

For lighting projects, existing fixture wattages should align with standard wattages provided in this [document](#) or otherwise be supported by manufacturer’s specification sheets.

Proof of applicable qualified product listing for proposed equipment should be submitted in Appendix E of the FEEP where required by the minimum performance standards of the program. **Refer to Appendix A of this program guide for a full list of specific qualified product listing requirements.** Qualified product listings may include:

- For LED lighting, attach a printout/screenshot of the specific model number that will be installed from www.designlights.org or www.energystar.gov. The proposed fixture/lamp wattage used to calculate project savings should match the rated wattage as reported by DLC® or ENERGY STAR®.
- For HVAC projects, attach the equipment AHRI certificate from www.ahridirectory.org.

8. Deadlines and Extensions

8.1 Pre-Qualification Applications

Completed and signed FY24 Pre-Qualification Applications must be submitted no later than June 30, 2024.

8.2 Energy Plans

The first energy plan must be submitted no more than 3 months after the date of Pre-Qualification Application approval. One extension up to 3 months may be provided by the Program Manager. The first energy plan may be either a DEEP or FEEP.

Second and third energy plans must be submitted no later than June 30, 2024.

If the applicant submits a DEEP, the FEEP must be submitted no more than 3 months after the approval date of the DEEP. One extension up to 3 months may be provided by the Program Manager.

8.3 Measure Implementation/M&V Completion

ECMs must be fully installed, and closeout documents submitted no later than twelve months from approval of the FEEP, provided, however, that the Program Manager may allow up to twenty-four months where special circumstances beyond the reasonable control of the applicant (such as exceptionally large or complex projects or projects experiencing unusually severe supply chain disruptions or personnel shortages) justify such longer period.

8.4 Deficient Applications

Upon review of a submission (pre-qualification application, energy plan, closeout) the Program Manager may send a deficiency notice, i.e. a request for additional information, missing documentation or clarification via email to the customer and/or their third party representative. Deficiency notices must be resolved within 60 days, otherwise the submission may be canceled.

8.5 Extension Requests

If a customer is unable to complete the project prior to the expiration date, the customer may submit to the Program Manager a request for an extension. Up to two extensions may be granted by the Program Manager for a period of up to six months each.

Extension requests must be submitted prior to the expiration date in writing or via email, must state the reason for the request and provide proof of project advancement. Project advancement may be demonstrated through copies of permits, equipment invoices, installation invoices indicating percentage complete, updated project schedules, and similar documents.

Additional extensions requested beyond the two 6-month extensions provided by the Program Manager must be submitted to BPU Staff for consideration.

9. Inspections

Pre-inspection of measures will occur after the applicant has submitted a FEEP with necessary scope of work information. LEUP applicants may proceed with removal of existing equipment and installation of proposed measures only after successful pre-inspection of the measure, which occurs after submittal of the FEEP. Applicants that move ahead with installation prior to formal approval of the FEEP do so at their own risk.

The program may conduct up to three site inspections per FEEP submission including a pre inspection, at 50% completion, and 100% completion, as required. A pre inspection will be scheduled within 30 days of FEEP submittal, granted sufficient data is provided. Entity will need to provide access to site and notification upon reaching specific percent completions as mentioned above.

Measures which require an inspection at 50% completion will be identified by the Program upon submittal of the FEEP. These measures may include building shell upgrades or equipment which will be inaccessible once installed. If ECMs are not completed within the specified timeframe, incentive commitment may be forfeited. Entity will provide M&V data as requested and will comply with any program evaluation activities.

Post-inspection will occur after the applicant notifies the Program Manager of project completion and submittal of project invoices.

10. Quality Control Provisions

Documented policies and procedures provide proper guidelines to ensure consistency in the processing and quality control for all Program participants. All energy efficiency plans are reviewed upon receipt to verify adherence to eligibility requirements. Applicant eligibility information is verified, along with all technical information in support of energy efficient measure qualification and incentive calculation. Applicant supplied information and program manager performed incentive calculations are entered into the database, and files are created for all documents and ongoing project correspondence. Pre and/or post inspections will be conducted as required.

11. Program Dispute Resolution

Disputes, concerns, or complaints that arise will be addressed initially by the Program Manager or Program Staff at the point of contact. If resolution for whatever reason is not possible, there is a [dispute resolution process](#) backed by the NJ Board of Public Utilities.

11.1 Contractor Remediation

The program is designed to allow for participation by applicant in-house staff or any third party contractor that meets the program requirements. There are BPU approved contractor remediation procedures that will be followed if a contractor is found to violate program procedures and rules or consistently violates program requirements which may include being barred from participating in the program.

12. Call Center Support

New Jersey's Clean Energy Program operates a call center staffed weekdays between 9 AM and 5 PM. The phone number is 866-657-6278. The call center is trained in answering general questions about the program and application processes as well as able to provide specific information pertaining to an application.

Appendix A: Minimum Performance Standards

This Appendix contains information on minimum performance standards for measures included in the project work scope (derived from NJ Protocols to Measure Resource Savings).

General Performance Standards:

- For all measures, minimum efficiencies and/or requirements must meet or exceed the more stringent of ASHRAE 90.1-2019 for non-residential buildings or local code. Equipment not regulated by these codes must be more efficient than industry standard. Requirements may be waived or modified by Program Manager on a case-by-case basis due to limited market availability of equipment.
- Additionally, all applicable equipment must be new and listed by UL or other OSHA approved Nationally Recognized Testing Laboratory (NRTL), such as CSA, in accordance with applicable US standards. Manufacturer's specification sheets may be requested by Program Manager to confirm performance.
- Equipment with applicable Qualified Products Lists such as ENERGY STAR®, Consortium for Energy Efficiency (CEE), or DesignLights Consortium must be listed on the current version of the list to qualify for incentives.

Measure Specific:

- For Electric Unitary HVAC, both indoor and outdoor components of a Split System must be replaced to qualify for an incentive
- For Ground Source Heat Pumps, performance ratings (EER, COP) for qualifying closed loop Ground Source Heat Pump equipment are calculated at 77 degrees Fahrenheit entering water temperature per test procedure ISO-13256-1. No incentives are available for open loop Ground Source Heat Pump equipment.
- For VFDs in HVAC Systems - VFDs must be installed in a system that incorporates pressure sensors (or other applicable sensor devices) in the flow stream.
- For VFDs in Boiler Systems – VFDs must be controlled by an automatic signal in response to modulating air/water flows.
- For Lighting:

General:

- Applicant and/or contractor shall be responsible for maintaining and confirming adequate light levels.
- Incentives will not be provided for the installation of screw-in or plug-in lighting measures in non-permanent fixtures. For example, screw-in or plug-in lamps installed in refrigerator, oven, floor or desk lamps are not eligible for incentives.
- Lighting measures installed for use as retail display lighting do not qualify for incentives (i.e. lamps/fixtures for sale).

LED:

- LED product must be listed on ENERGY STAR® or Design Lights Consortium (DLC) qualified products list.
- DLC qualified products must be installed in line with the Primary Use Category (For example, a fixture designated by DLC under the primary use category Outdoor Full-

Cutoff Wall-Mounted Area Luminaires will not receive an incentive when installed in an interior space).

- Must replace existing incandescent/halogen, fluorescent, CFL or HID lighting only.
- Lighting controls, where installed, must control eligible energy efficient lighting fixtures meeting standards in section A-8.
Occupancy sensors shall not be installed in a space where they are prohibited by state or local building or safety code. For example, lighting controls in stairways (except bi-level), elevators, corridors/hallways, lobbies, and closet/storage areas are not eligible for incentives.

Occupancy Sensor Wall Mounted (OSW):

- OSW sensors must not allow manual override to the “ON” position.

High-Low Controls (OHLC):

- Not eligible in spaces smaller than 250 square feet.
- “Low level” shall be no more than 60% of “high level.”

Daylight Dimming Controls (DDC):

- Dimming shall be continuous or stepped at 4 or more levels.
- Daylight dimming control systems must be designed in accordance with IESNA practice as delineated in “RP-5-99, IESNA Recommended Practice of Daylighting.”

Appendix B: Measure Life

The measure lives listed below should be used for IRR calculations. Deviation from the below stipulated measure lives must be supported by appropriate documentation.

Commercial and Industrial Measures	Measure Life (years)
Commercial Lighting — New	15
Commercial Lighting — Remodel/Replacement	15
Commercial Lighting Controls — Remodel/Replacement	18
Commercial Custom — New	18
Commercial Chiller Optimization	18
Commercial Unitary HVAC — New - Tier 1	15
Commercial Unitary HVAC — Replacement - Tier 1	15
Commercial Unitary HVAC — New - Tier 2	15
Commercial Unitary HVAC — Replacement Tier 2	15
Commercial Chillers — New	25
Commercial Chillers — Replacement	25
Commercial Small Motors (1-10 HP) — New or Replacement	20
Commercial Medium Motors (11-75 HP) — New or Replacement	20
Commercial Large Motors (76-200 HP) — New or Replacement	20
Commercial VSDs — New	15
Commercial VSDs — Retrofit	15
Commercial Air Handlers Units	20
Commercial Heat Exchangers	24
Commercial Burner Replacement	20
Commercial Boilers	25
Commercial Controls (electric/electronic)	15
Commercial Controls (Pneumatic)	10
Commercial Custom — Replacement	18
Industrial Lighting — New	15
Industrial Lighting — Remodel/Replacement	15
Industrial Unitary HVAC — New - Tier 1	15
Industrial Unitary HVAC — Replacement - Tier 1	15
Industrial Unitary HVAC — New - Tier 2	15
Industrial Unitary HVAC — Replacement Tier 2	15
Industrial Chillers — New	25
Industrial Chillers — Replacement	25
Industrial Small Motors (1-10 HP) — New or Replacement	20
Industrial Medium Motors (11-75 HP) — New or Replacement	20
Industrial Large Motors (76-200 HP) — New or Replacement	20
Industrial VSDs — New	15
Industrial VSDs — Retrofit	15
Industrial Custom — Non-Process	18
Industrial Custom — Process	10
Industrial Air Handler Units	20

Industrial Heat Exchangers	20
Industrial Burner Replacements	20
Small Commercial Gas Furnace — New or Replacement	20
Infrared Heating	17
Small Commercial Gas Boiler — New or Replacement	20
Small Commercial Gas DHW — New or Replacement	10
C&I Gas Absorption Chiller — New or Replacement	25
C&I Gas Custom — New or Replacement (Engine Driven Chiller)	25
C&I Gas Custom — New or Replacement (Gas Efficiency	18
O&M savings	3
Compressed Air (GWh participant)	8
Refrigeration	
Evaporator Fan Control	10
Cooler and Freezer Door Heater Control	10
Polyethylene Strip Curtains	4
Food Service	
Fryers	12
Steamers	10
Griddles	12
Ovens	12

Appendix C: Measurement and Verification Guidelines

A building-specific pre- and post-metering plan is a required component of each FEEP and must, in general, address the following for each measure and building in order to properly determine energy savings:

1. How will the pre-retrofit equipment usage be determined?
2. How will the post-retrofit equipment usage be determined and how will that relate to the pre-retrofit conditions?
3. What factors or variables affect energy consumption of both pre and post-retrofit conditions (e.g. outside and indoor air temperature, humidity, occupancy, and operating hours)?
4. How will these factors/variables be measured and used to adjust the pre or post-retrofit energy usage, if necessary, so savings can be determined?

Measurement and Verification Procedure

The following chart presents four different options for determining pre and post-retrofit equipment energy consumption. Entities and their contractors are required to follow one of the options outlined below when preparing the FEEP. The FEEP should include the entity's plan and methodology to calculate the savings of the project(s). The entity does not need to select only one option and has the flexibility to select different plans for different ECMs. Alternative methods for M&V must be pre-approved by the Program Manager.

The M&V options and methods below are adopted from the *2011 International Performance Measurement and Verifications Protocol (IPMVP), Volume 1*.

IPMVP Option	How Savings Are Calculated	Typical Applications
<p>A. Retrofit Isolation: Key Parameter Measurement</p> <p>Savings are determined by field measurement of the key performance parameter(s) which define the energy use of the ECM's affected system(s) and/or the success of the project.</p> <p>Measurement frequency ranges from short-term to continuous, depending on the expected variations in the measured parameter, and the length of the reporting period.</p> <p>Parameters not selected for field measurement are estimated. Estimates can be based on historical data, manufacturer's specifications, or engineering judgment. Documentation of the source or justification of the estimated parameter is required. The plausible savings error arising from estimation rather than measurement is evaluated.</p>	<p>Engineering calculation of baseline and reporting period energy from:</p> <ul style="list-style-type: none"> ▪ short-term or continuous measurements of key operating parameter(s); and ▪ estimated values <p>Routine and non-routine adjustments as required.</p>	<p>A lighting retrofit where power draw is the key performance parameter that is measured periodically. Estimate operating hours of the lights based on building schedules and occupant behavior.</p>

IPMVP Option	How Savings Are Calculated	Typical Applications
<p>B. Retrofit Isolation: All Parameter Measurement</p> <p>Savings are determined by field measurement of the energy use of the ECM-affected system.</p> <p>Measurement frequency ranges from short-term to continuous, depending on the expected variations in the savings and the length of the reporting period.</p>	<p>Short-term or continuous measurements of baseline and reporting period energy, and/or engineering computations using measurements of proxies of energy use.</p> <p>Routine and non-routine adjustments as required.</p>	<p>Application of a variable speed drive and controls to a motor to adjust pump flow. Measure electric power with a kW meter installed on the electrical supply to the motor, which reads the power every minute. In the baseline period this meter is in place for a week to verify constant loading. The meter is in place throughout the reporting period to track variations in power use.</p>
<p>C. Whole Facility</p> <p>Savings are determined by measuring energy use at the whole facility or sub-facility level.</p> <p>Continuous measurements of the entire facility's energy use are taken throughout the reporting period.</p>	<p>Analysis of whole facility baseline and reporting period (utility) meter data.</p> <p>Routine adjustments as required, using techniques such as simple comparison or regression analysis.</p> <p>Non-routine adjustments as required.</p>	<p>Multifaceted energy management program affecting many systems in a facility. Measure energy use with the gas and electric utility meters for a twelve month baseline period and throughout the reporting period.</p>
<p>D. Calibrated Simulation</p> <p>Savings are determined through simulation of the energy use of the whole facility, or of a sub-facility.</p> <p>Simulation routines are demonstrated to adequately model actual energy performance measured in the facility.</p> <p>This Option usually requires considerable skill in calibrated simulation.</p>	<p>Energy use simulation, calibrated with hourly or monthly utility billing data. (Energy end use metering may be used to help refine input data.)</p>	<p>Multifaceted energy management program affecting many systems in a Facility, but where no meter existed in the baseline period.</p> <p>Energy use measurements, after installation of gas and electric meters, are used to calibrate a simulation.</p> <p>Baseline energy use, determined using the calibrated simulation, is compared to a simulation of reporting period energy use.</p>

M&V Plan Outline

The following items must be addressed in the Metering Plan for each proposed ECM.

- Schedule for all M&V activities
- Identification of IPMVP Option selected
- Details of baseline conditions and data to be collected
- Documentation of all assumptions and sources of data
- Details of engineering analysis to be performed and how energy savings will be calculated and extrapolated to annual savings
- Details of any other savings claimed
- Details of post-installation verification activities to be performed and by whom, including inspections, measurements, analysis and customer project acceptance procedures
- Details of any anticipated routine adjustments to baseline or reporting period energy and/or adjustment parameters
- Define the content and format of all required M&V reports (post-installation and periodic M&V). An anticipated M&V report template may be provided.

Determining Metering Duration

The metering and monitoring period must be long enough to accurately represent the annual amount of energy consumed by the affected equipment. The required duration depends on the measure. For instance, if a system that operates according to a well-defined schedule under a constant load, such as a constant-speed exhaust fan motor, the period required for determining annual savings could be short. In this case, measured energy savings can be extrapolated to account for the entire year.

If, however, the equipment's use varies across both day and season, as with air-conditioning equipment, a much longer metering or monitoring period may be required to characterize the system. In this case, long-term metering (3-6 months) is used to determine annual energy savings. A chiller retrofit may require metering throughout the cooling season or perhaps for one month each season of the year.

If energy consumption varies by more than 10% from one month to the next, measurement duration should be sufficient enough to document these variances. In addition, changes that will affect the baseline adjustment by more than 10% should also be documented and explained. Any major energy consumption variances due to seasonal activity increases or periodic fluctuations must also be monitored. If these variances cannot be monitored for whatever reason, they must be included in the annual energy consumption figure through a mathematical adjustment agreeable to the Program Manager. Note that any auxiliary energy-consuming equipment must be metered or modeled if its energy consumption changes as a result of project installation.

Multiple Buildings

Using the multiple building plan approach will reduce the required total number of monitoring points. A multiple building Metering Plan can be used only for multiple buildings with common measures and similar occupancy, usage, and energy consumption patterns. If any of these variables are significantly different, an individual Metering Plan must be prepared for each building. The Program Manager encourages the use of multiple building approaches when possible to minimize M&V costs. As buildings are aggregated together into a multiple building Metering Plan it is imperative to carefully select the usage groups. Spaces within a single usage group should have an expected range in hours of operation of no more than $\pm 15\%$. Failure to

follow this guideline can result in incorrect calculation of energy savings, and hence incentive amounts.

Submitting Metered Data

Please be aware, pre and post-metered data itself is not required to be included in the FEEP however the Program Manager reserves the right to request metered data at any time. Data must be provided in formats usable by the Program Manager and not based on products or software that are not publicly available. If special software products are required for the reading or analysis of entity submittals, the Program Manager may reject the data or request the entity to provide the software. Both “raw” and “compiled” data may be required by the Program Manager to support surveys, savings estimates, and calculations.

M&V Report Requirements

The following items must be addressed in the post-installation M&V Report for each proposed ECM.

- As-built project description and list of installed equipment. Provide details of any changes between approved and as-built conditions, including energy impacts
- Description and documentation of all post-install verification activities and performance measurements conducted, including: measurement start/end dates, inspections and results/documentation of performance measurements, including metered data in Excel format as applicable.
- Calculation of realized savings for the year (energy, energy costs, O&M costs, other)
- A written summary comparing measured savings to the approved amounts, with a clear explanation and reason provided for any differences.
- Details of any performance or O&M issues that require attention.